TECHNICAL NOTES
LAKE STATES FOREST EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE · FOREST SERVICE

No. 561

Sugar Maple and Yellow Birch Seed Dispersal from a Fully Stocked Stand of Mature Northern Hardwoods in the Upper Peninsula of Michigan

The dispersal of seed from sugar maple and yellow birch trees at the Upper Peninsula Experimental Forest indicates that an adequate amount of seed can be expected for at least 5 chains in all directions from an old-growth stand of northern hardwoods during good seed years. Sugar maple seed is nearly all on the ground before snowfall but most of the yellow birch seed falls on the snow in this area.

These results were obtained in a study on a 10-acre clear-cutting area where distances and time of dispersal could be measured. The distances measured from the edge of the timber are somewhat conservative for estimating seed travel, as part of the seed undoubtedly came from within the stand.

Seed traps were installed at 1-chain intervals in a north-south row and east-west row across the center of the clearing. Weekly collections of seed were made until snowfall in the middle of November, and a final collection was made after snowmelt in the spring.

This study was carried out during a good seed year for both sugar maple and yellow birch. Sugar maple averaged 290,000 seeds per acre at the edge of the uncut stand and 70,000 at the center of the clear-cut area. Yellow birch ranged from an average of 1,330,000 seeds per acre at the edge to 220,000 at the center.

Maximum seed dispersal for sugar maple occurred during the last 2 weeks of September when over one-half of the seed fell. An additional 30 percent fell during the first 2 weeks of October and by the 23d, over 90 percent of the sugar maple seed was on the ground. More than 99 percent of the sugar maple seed had fallen before the snow on November 13. Less than 6 percent of the yellow birch seed had fallen by October 23, and on November 13 only 12 percent had fallen. Eighty-eight percent of the yellow birch seed was dispersed over the winter.

Seed fall varied with the direction and distance from the seed source. The amount of sugar maple seed was the greatest from the south and east, but that of yellow birch was more numerous from the north. This is partly accounted for by the composition of the seeding stand. The northern hardwood type surrounds the area, but there is more yellow birch to the north and west than to the south and east where the stand is predominantly sugar maple.

Although the wind, at the time seeds were released, must have influenced the direction of seed fall, the prevailing winds could not be correlated to seed dispersal. This indicates that seeds are released intermittently rather than uniformly over the dispersal period. Factors other than wind are probably involved in determining the actual time seeds are dispersed after they ripen, but strong winds are expected to have considerable influence.

July 1959

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